What is claimed is:

1. A single sideband (SSB) mixer, comprising:

a first mixer and a second mixer, wherein the first and second mixers multiply an input IF (intermediate frequency) signal by a local IF signal having the same frequency of the input IF signal;

a band-pass filter which passes upper sideband signal output from the first mixer;

a third mixer which multiplies the upper sideband signals output from the band-pass filter by a LO (local oscillating) signal;

a fourth mixer which multiplies the signals output from the second mixer by the LO signal; and

a subtraction device that subtracts output signals of the third mixer from output signals of the fourth mixer.

2. The SSB mixer of claim 1, further comprising a variable gain amplifier, operatively connected between the second and fourth mixers, for adjusting the gain and phase of signals output from the second mixer.

3. The SSB mixer of claim 1, further comprising means for generating the local IF signal and the LO signal.

4. The SSB mixer of claim 1, wherein the output of the subtraction device comprises a signal having the same frequency as the LO signal.

5. A SSB (single sideband) mixer, comprising:

a first mixer for multiplying a first input IF (intermediate frequency) signal by a local IF signal having the same frequency of the input IF signal;

a second mixer for multiplying the local IF signal by a second input IF signal, wherein the second IF input signal is the same as the first input IF signal but opposite in phase;

a band-pass filter which passes upper sideband signals output from the first mixer;

a third mixer which multiplies signals output from the band-pass filter by a LO (local oscillating) signal;

a fourth mixer which multiplies signals output from the second mixer by the LO signal; and

an adding device which adds signals output from the third and fourth mixers.

6. The SSB mixer of claim 5, further comprising a variable gain amplifier, operatively connected between the second and fourth mixers, for adjusting the gain and phase of the signals output from the second mixer.

7. The SSB mixer of claim 5, further comprising means for generating the local IF signal and the LO signal.

8. The SSB mixer of claim 5, wherein the output of the adding device comprises a signal having the same frequency as the LO signal.

9. A SSB (single sideband) mixer, comprising:

a first mixer which multiplies an input IF (intermediate frequency) signal by a local IF signal having the same frequency as the input IF signal;

a low pass filter which passes a base band signal output from the first mixer; and

a second mixer which multiplies the base band signal by a LO (local oscillating) signal.

10. The SSB mixer of claim 9, further comprising means for generating the local IF signal and the LO signal.

11. The SSB mixer of claim 9, wherein the second mixer outputs a signal having the same frequency as the LO signal.

12. A method of extracting a single sideband (SSB) signal, comprising the steps of:

(a) multiplying an input IF (intermediate frequency) signal by a local IF signal having the same frequency of the input IF signal to generate an upper sideband and lower sideband of frequencies, the upper sideband comprising a signal equal in frequency to the sum of the frequencies of the input IF signal and the local IF signal, and the lower side band comprising a signal equal in frequency to the difference between the frequencies of the input IF signal and the local IF signal;

(b) multiplying said upper sideband by a LO (local oscillating) signal to generate first output signals;

(c) multiplying said lower sidebands by the LO signal to generate second output signals; and

(d) subtracting the first output signals from the second output signals to obtain a single frequency signal.

13. The method of claim 12, further comprising the step of filtering the signals obtained in step (a) to provide said upper sideband used in step (b).

14. The method of claim 12, wherein said single frequency signal obtained in step (d) comprises the LO signal frequency.

15. A method of extracting a single sideband (SSB) signal, comprising the steps of:

(a) multiplying an input IF (intermediate frequency) signal by a local IF signal having the same frequency of the input IF signal to generate a first upper sideband and a first lower sideband of frequencies, the first upper sideband comprising a signal equal in frequency to the sum of the frequencies of the input IF signal and the local IF signal, and the first lower sideband comprising a signal equal in frequency to the difference between the frequencies of the input IF signal and the local IF signal;

(b) filtering the signals obtained in step (a) to output only said first upper sideband;

(c) inverting the input IF signal and multiplying the inverted input IF signal by the local IF signal to generate a second upper sideband and a second lower sideband of frequencies, the second upper sideband comprising a signal equal in frequency to the sum of the frequencies of the inverted input IF signal and the local IF signal, and the second lower side band comprising a signal equal in frequency to the difference between the frequencies of the inverted input IF signal and the local IF signal;

(d) multiplying said first upper sideband obtained in step (b) by a LO (local oscillating) signal;

(e) multiplying said second upper sideband and said second lower sideband obtained in step (c) by the LO signal; and

(f) adding signals obtained in steps (d) and (e) and outputting a single frequency signal.

16. The method of claim 15, wherein said single frequency signal obtained in step (f) comprises the LO signal frequency.

17. A method of extracting a single sideband (SSB) signal, comprising the steps of:

(a) multiplying an input IF (intermediate frequency signal) signal by a local IF signal having the same frequency as the input IF signal to generate a plurality of signals;

(b) extracting a base-band signal from the plurality of signals generated in step (a); and

(c) multiplying the base-band signal by a LO (local oscillating) signal and outputting a single frequency signal.

18. The method of claim 17, wherein the single frequency signal obtained in step (c) comprises the LO signal frequency.